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1     I CLAIM:

2           1.     In the cyclone apparatus, feed fluid comprising solid-  
3     solid, solid-fluid particulate suspension delivered in fluid flow  
4     to a cyclone separator, having an axially elongated cylindrical  
5     conical separation chamber, a cylindrical upper portion and conical  
6     bottom portion the said cylindrical upper portion having an exhaust  
7     pipe, having a bottom region disposed in said upper portion of said  
8     separation chamber and an inlet duct disposed in said upper portion  
9     of said separation chamber for introducing said feed fluid in a  
10    tangential direction in a helical swirling flowing pattern so as to  
11    establish a circular velocity and counter-flowing inner and outer  
12    vortexes within the cylindrical-conical separating chamber, a  
13    lighter portion of said feed fluid moves to the inner vortex and  
14    exits through the exhaust pipe as overflow and to a heavier portion  
15    of said feed fluid moves to the outer vortex and exist through the  
16    bottom outlet, as underflow, the improvement in the apparatus  
17    comprising the step of.:

18           Introducing a plurality of fundamental cylindircal telescopic  
19    units to create multi-compartment separation chamber so that each  
20    compartment can be seen as separated cyclone. All those according  
21    the idea generated in Patent No. 6071424 and Application No.  
22    10/131425 filed <sup>MAY 22, 2002.</sup> ~~April 23, 2002.~~ W.T.

1           2. The improved apparatus according to Claim 1 introducing  
2 multi-compartment separation chamber so it can be designed in  
3 cylindrical telescopic cyclone housing as well as in conical  
4 cyclone housing or in another kind of housing.

5           3. The improved apparatus according to Claim 1 introducing  
6 the fundamental telescopic unit comprising two different dimensions  
7 cylinders axially connected with passage between them made of the  
8 same material like cyclone housing or as replaceable liners.

9           4. The improved apparatus according to Claim 1 introducing  
10 the longitude axial wall section of the fundamental unit comprising  
11 the angle  $\alpha$  between upper wall stretch and longitude axis, the  
12 angle  $\beta$  between lower wall stretch and longitude axis, and the  
13 interior angle  $\gamma$  between upper and lower stretches.

14          5. The improved apparatus according to Claim 1 as  
15 Embodiment1 introducing for a given fundamental unit measurements  
16 comprising such Set. No.1 of angle  $\alpha, \beta, \gamma$  so that the unit upper  
17 portion is predominately cylindrical and lower portion is conical  
18 Then to obtain the best cyclone performances.

19          6. The improved apparatus according to Claim 1 as Embodiment2  
20 introducing for a given fundamental unit measurements comprising  
21 the Set No.2 of angles  $\alpha, \beta, \gamma$  that the unit is of all long one  
22 conical shape to obtain the worse cyclone performances.

1           7. The improved apparatus according to Claim 1 as  
2   Embodiment1 introducing for a given fundamental unit measurement  
3   comprising such Set No.3 of the angles  $\alpha \beta \gamma$  to be between Set  
4   No.1 and Set No.2, that the unit consists of two conical portions,  
5   upper one and lower one. Then the decreased cyclone performances  
6   follow growing the angle  $\alpha$ .

7           8. The improved apparatus according to Claim 5, 6 and 7  
8   introducing the suitable replacable liners to be put in cyclone  
9   housing to get the chosen shape of each compartment, if cyclone  
10   housing is not formed finally as desired to get the cylindrical  
11   telescopic multi-compartment separation chamber.